

TECHNICAL DEPT.

# AVIATION

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*The Oldest American Aeronautical Magazine*

OCTOBER 31, 1927

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Photo of the "Pride of Detroit" taken at sunset as it flew over Shanghai, China.

VOLUME  
XXII

## *Special Features*

NUMBER  
18

The S.A.E. Aeronautic Meeting  
The Schneider Trophy Race Through American Eyes  
The Wind Tunnel and Its Contribution to Aviation

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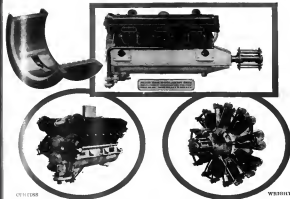
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engines.

*Forged Two-Piece  
Duralumin Crankcase*

Design begun July, 1921, Design  
completed December, 1921, First  
test produced May, 1922, First  
engine completed June, 1922;  
Official 100 hour British Government  
type test completed in July,  
1923, and provision adapted to  
all production engines.



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New York-Rome-Alex., by Duggan, Olivero and Camporelli, in a S. A. V. O. L. A. flying boat, with a 450 H. P. engine.

### 1926

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(Circuit des Capitales), in a Petee XXV, with 450 H. P. engine.

6,500 miles in 6 days, 18 hours, Paris-Peking by Pelletier-Ducay and Carol in a Bergeot with 450 H. P. engine.

6,500 miles in 9 days, (9 stops) Tokio-Capenhagen by Captain Hestved flying a Fokker with 450 H. P. engine.

4,000 miles in 41 hours 45 minutes, total time, Paris-Rome-Tunis-Casablanca-Paris by Pelletier-Ducay and Gossin in a Petee 25 with 450 H. P. engine.

### 1927

15,000 miles in flying boat across Africa by Capitaine de corvette Gauthier and machine Rapin.

Crossing South Atlantic, from Bahia to San Fernando de Nochea, 5000 miles in a non-stop night flight of 17 hours, 20 minutes by Major Sarmiento de Estero.

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## With the Editor

ON page 1055 of this issue of AVIATION is to be found an eye witness story of the recent Schneider Trophy Race written by Maj. Lester D. Gardner, publisher of AVIATION, and official observer of the race for the National Aeronautic Association.

Among the many interesting features of the story about which Major Gardner writes is that of the highest lap speed attained by the contestants. When news of Great Britain's triumph was first received in this country it was reported that Flight Lieutenant Kinkaid, R.A.F., had piloted a tilster Napier IV over one lap of the course at the speed of 269 m.p.h. However, according to Major Gardner, this lap speed was posted in error and that Flight Lieutenant Kinkaid's highest lap speed was only 217½ m.p.h. Much being true, the highest lap speed should be credited to the winner of the race, Flight Lieut. S. N. Webster, R.A.F., who averaged 251.65 m.p.h. for the entire course and varied but a second or two in the times for the seven laps that he flew.



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A TURBOCHARGED  
**engine**



Vol. XXIII

OCTOBER 31, 1927

No. 15

### The Pioneer Manufacturer

**N**OW THAT aviation has ceased to be merely an art and is taking its rightful place among the industries of the world it would seem advisable for the pioneer aircraft manufacturer to take full stock of himself and his own particular plant. The day of laboring and expostulating for the love of the game is gone, and in its place we now have an industry that will still labor for skill and experience, but not for personal glory or advancement. Instead, the perpetual objective will be the organization of dollars and cents, and to attain that objective the industry will be considered along solid, hard business lines.

For that reason alone, the aircraft manufacturer who has been building daily for the last decade or more will do well to realize that his future success will be dependent not only upon the results of his design but also upon the way he conducts his business. He is a business man as well as an engineer, then so much the better. But he is only an engineer, then it will pay him to relinquish the management of his business in favor of someone who can conduct it as the most profitable way.

Such would not mean the loss of financial control, nor the stripping aside in his own production, but rather a generous sacrifice of the possible loss of years of effort. Whether it be airplanes or parts, successful success in design (by the application of sound business methods) is, of course, that the product is saleable. And it will be that will cause application of several business methods that will speak for itself first and ten years hence when those not connected with aeronautics will be the minority. Pioneering efforts and achievements are sometimes long in being recognized but when they are it is the time to be on the alert lest they soon be forgotten in the mistletoe of successful enterprise.

### Stock Control Value

**S**TOCK CONTROL has long since proven its value in recovering business, and there seems to be no way in which it should be the exception to the rule. Yet there is in the aeronautical industry, as in other industries, a north while aviators' system as a secondary value.

The fellow in particular sometimes feels that his business is not of a size to warrant strict attention to this line and that his pocketbook is sufficiently filled to afford a casual expenditure of some \$2500 to \$5000 for the use of an accurate perpetual inventory. However, history is full of small organizations going to the wall owing to a too late discovery of the leak in the

stockroom. And for that reason it would seem that it was not a question of whether the particular firm could afford to pay inventory expenditures, but rather it could afford NOT to.

Stock control is not so complicated as it is oft times believed to be, provided that it is not put into practice in a hot and cold manner. In the end it will save far more than it costs, and now that the aeronautical industry is in its infancy it would seem highly advisable for each and every manufacturer, distributor and service organization to give the matter profound consideration as a step toward future business success.

### The Mexican Embargo

**T**HE EMBARGO against shipping arms or instruments of war into Mexico has been in force against airplanes for some time and its effects are beginning to be felt. Last summer a Colorado ranch manager, who also had ranching interests in Mexico, purchased a Fairchild monoplane in order that he might more easily attend to his widely scattered properties. The State Department however refused to grant him permission to fly into Mexico although he had no intention of selling his plane or of using it for other than civilian purposes. Due to the existing transportation facilities Mexico offers a very good market for American aviation aircraft and American aircraft should be encouraged to give demonstrations rather being prohibited from entering the country.

A Mexican military mission has recently arrived in Paris with considerable funds for the purpose of purchasing military airplanes for the Mexican army. The United States would be a much more logical place to make these purchases but unfortunately the embargo on arms does not permit it. As the Mexican government is based to purchase a plane it seems to be rather a foolish policy to force them to go to Europe for their material. We are not only depriving our manufacturers of an outlet for their goods but we are building up a source of supply which makes the Mexican government entirely independent of the United States.

Although at the present time the airplane factories of the United States are fully occupied in meeting the internal demands, there will undoubtedly come a time when the export business will become as important as airplane manufacturing as it has become in automobile manufacturing. The Department of Commerce has released this and has sent a mission to South America to find out what the market is and to boost American planes. It is hoped that our relations with our neighbors on the south will become such that this important market will not be closed to American manufacturers.

# The Schneider Trophy Race Through American Eyes

By LESTER D. GARDNER



LONG BEFORE the account of the Schneider Trophy race at Venice was printed in *American*, the *American* is sure to have printed the details of the air racing victory of the British entrants. It will therefore be unnecessary in this article to give many of the unimportant facts, but there is no longer news.

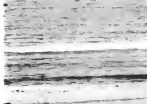
Having attended the last two Schneider Trophy races, one at Baltimore, Md., and the other at Norfolk, Va., it has been interesting to the writer to observe the competition at Venice and still shown in the management and on land at the most at Venice by the Italian officials.

## Venice in Holiday Regalia

The most significant and impressive fact that appeared to an American observer was the intense popular enthusiasm of the whole Italian people concerning this greatest aviation contest. Venice was no idle, empty, business, historic and poetic town everywhere. The streets were crowded with pedestrians and other small boats of every description. Thousands of Italian, English, German and American tourists were on the narrow streets, while St. Mark's Piazza was filled with the throng and with a joyous happy throng.

Venice, while an excellent place to hold the race from the standpoint of water conditions, found itself with almost no water craft to carry the crowds to the Lido where the race was held. The Lido is a narrow strip that separates the lagoon, in which Venice is the principal island, from the Adriatic Sea where a considerable course had been sailed off by the customary pilots. From Venice to the Lido, it took only about fifteen minutes by boat, but when two hundred thousand people try to get across at the same time, the road will be self-evident. Even more difficult was the return journey, the publisher of *American* having to cross in a crowded, uncomfortable gondola of the post-war Italian type.

The Crown Prince of Italy came to Venice with a large



Flight leader, S. M. Watson, R.A.F. crossing the finish line in his Representative Napier 16, the winner of the 1927 Schneider Trophy Race.



The British and Italian entrants at the 1927 Schneider Trophy race undergoing the pre-race inspection of the Lido at Venice, Italy.

party in a great honorably to the occasion. His presence was a welcome sight of the interest taken by everyone in Italy in the first of the air races. Perhaps one of the first things that interested visitors observed at our meeting in Europe is the presence of the highest officials of each country. Kings, emperors, and members of the nobility occasionally attended, while in the United States it has been extremely difficult to secure even the attendance of the highest members most interested. Air power in Europe is regarded with a much greater respect than in the United States, and therefore, attracts more important personages.

The preparations for the race were admirable. The trophies for the Italian and English entrants were located on the deck of an hotel opposite one another so that while the two could exchange friendly courtesies easily, they also could, when desirable, have complete privacy. One notable feature was that the public was kept away from the boats which made for much better conditions than at any other similar event that the writer has ever attended.

## Luncheon in Honor of Racers

The Under Secretary of State for Aviation, His Excellency Luigi Balbo was present with a large staff of officers of the Royal Italian Air Force. Before the race, he presided at a luncheon given by the Air Ministry at home of the participants in the race at the Vendôme Palace Hotel at the Lido. About 300 guests attended and the representatives of the National Aeronautics Association, was honored by being seated at the guest table between General Francesco de Pineda and Air Vice Marshal Sir Arthur Brudenell. General de Pineda and Air Vice Marshal Brudenell were the only speakers, both giving graceful replies to the opposing racing teams. It is of interest to note that Sir Philip flew to Venice for the race, leaving Rome at 10:30 A.M. and arriving at Venice in the late afternoon.

Before the mounting trials, one of the British planes



Leotecnico Redford, R.A.F. being used in his Special 18 (Napier) in the mounting trials prior to the pre-race inspection.

the Short-Crosser had a serious accident which fortunately did not injure the pilot. While the cause of the crash was not officially made public, there was much discussion of the possibility of the aircraft controls having been crossed.

The accompanying test which occurred three days before the race was passed by all of the entrants except one of the British planes which failed to taxi properly but the day after was permitted to complete its trials.

## Keen Rivalry Between Teams

Before the race, the rivalry between the two teams was felt everywhere. Major de Bussac, who was the skipper for Italy last year at Norfolk had a long following of admirers, but Capt. Arturo Ferrarin, a Venetian, and regarded as one of Italy's greatest speed pilots actually around the greatest popular enthusiasm in his home city. Captain Giannini and the reserve pilot Captain Giannini were somewhat overshadowed by their better known team mates.

The British team were everywhere in rising fame, having been selected to form a high speed team by the Air Ministry. The choice was not made as the result of any preliminary elimination trials, but the records of the pilots were examined and they were entered in the special class of winning the Schneider Trophy back to England. The participation of England in the race this year involved the necessity of what previously succeeded in a guarantee by all responsible for the planes, team and engine to win the race. Air Vice Marshal Sir John Hoggins, who is Air Member for Supply and Research and Air Vice Marshal H. F. Brudenell, who was in charge of the team for the Air Ministry, were probably the most vitally concerned officials present, as they bore the final responsibility for the success of the venture.

Before the race there was the usual discussion of possible speeds. Whenever the course, prepared by ALBERT, showing the speeds of the previous races and indicating a speed



On June 29, 1935, it was shown, the greatest speed was made by that it was high. The intensity of the speed was indicated by the curve which was suddenly suspended upon after the move.

It was believed by all that the March 1935 design March 1935 had increased the speed of the plane from the 200-230 m.p.h. of 1935 at Norfolk by at least 20 m.p.h. It was also shown that the British participants were aware of this possibility and would not have been so confident of their plane had a speed of less than 280-330 m.p.h. This was the intention before the race.

The postponement of the race from Sunday 13th Monday was very disappointing to thousands of visitors who had come to Vaux by special trains for the day and could not return for the race. In fact the race was so much on the day the race was scheduled that it was freely predicted that several days might elapse before weather conditions again became favorable. It was not until after Monday on Monday that it was finally decided that, in spite of a slight rain, the great aviation contest would take place.

#### Race Started at 2:30 P.M.

The crowd that witnessed the race contained many thousands, but as the famous stand was kept empty, there was ample room for all. Tiredness of all sides and ground had been used and it must be said that the racing confusion was freely mentioned. But this did not in any way extend to the spectators and control of the planes and course that no better managed race was ever held by the same means as on all sides.

The race itself started promptly at 2:30 and Flight Lord G. M. Kniskern in his Glider IV finished past the start at a speed that indicated that his plane was extremely fast.



Flight Lord G. M. Kniskern, R.A.F., giving his Supermarine Spitfire II in second place in the 1935 Schneider Trophy Race.

Major de Bernadelli followed in exactly first place as it was the March 1935 design. S. M. Webster, R.A.F., in his Supermarine 55, followed.

At five minutes intervals Captain Gosssett, in a March 1935 design, followed. S. M. Webster, R.A.F., in his Supermarine 55, followed. At five minutes intervals Captain Gosssett, in a March 1935 design, followed. S. M. Webster, R.A.F., in his Supermarine 55, followed. At five minutes intervals Captain Gosssett, in a March 1935 design, followed. S. M. Webster, R.A.F., in his Supermarine 55, followed.

#### Major de Bernadelli Forced Out

The first surprise came when the speeds were indicated, it was immediately apparent that the plane, if they were in the race, was flying faster than any other of the race, at least, before. The most obvious fact was that all the British entries were faster than the Italian Maudslayi. And that the most disappointing of the Schneider Trophy race remained Major de Bernadelli was the first surprise, dropped out on his second lap. Almost immediately after Captain Kniskern flew over the starting line he was seen to be flying very low and was down and his engine stopped. He landed and landed at the Italian team's hangar. The strong evidence was on the bank of the lake appeared strong evidence that the plane was flying faster than any other of the race was flying 30 m.p.h. slower than the French plane although the speed was about 20 m.p.h. faster than Major de Bernadelli's speed at Norfolk last year. The amazing speed of all three Italian planes apparently over a mile per hour, and when they were seen to be flying faster than the British plane was about 20 m.p.h. faster than the British plane. Kniskern was posted at 280 m.p.h. for a very difficult race with two other great planes, it was evident to all that the expected speed of over 300 m.p.h. on the straight was high. After three laps, Flight Lord Kniskern dropped out being the two Supermarine 55's and one March 1935. At the end of the sixth lap, Captain Gosssett flew within the feet of the lower of the hotel apparently in difficulty and was seen to turn toward his hangar.

By this time the crossing of the race was like a flight. Webster and Kniskern were both flying at a speed of 280 m.p.h. and when they were seen to be flying faster than the British plane was about 20 m.p.h. faster than the British plane. Kniskern was posted at 280 m.p.h. for a very difficult race with two other great planes, it was evident to all that the expected speed of over 300 m.p.h. on the straight was high. After three laps, Flight Lord Kniskern dropped out being the two Supermarine 55's and one March 1935. At the end of the sixth lap, Captain Gosssett flew within the feet of the lower of the hotel apparently in difficulty and was seen to turn toward his hangar.

#### English Plane Loses Spinner

As was announced, the speed of Flight Lord Webster was 280 m.p.h. with each of the seven laps within a race of two of such others. The speed of Flight Lord Webster was 272 m.p.h. immediately, the reason for the failure of the three March 1935 planes was the fact that the engine was very much damaged. The Italian engine was damaged by all aerodynamic experts. The Italian engine was very much damaged. The Italian engine was damaged by all aerodynamic experts. The Italian engine was damaged by all aerodynamic experts.

The difficulty that prevented Flight Lord Kniskern from completing the course was the loss of his engine which balanced his propeller and only through the use of a small propeller was he able to make a safe landing. Flight Lord Webster after the race told the publisher of Aviation that he was flying faster than any other of the race was flying 30 m.p.h. slower than the French plane although the speed was about 20 m.p.h. faster than Major de Bernadelli's speed at Norfolk last year. The amazing speed of all three Italian planes apparently over a mile per hour, and when they were seen to be flying faster than the British plane was about 20 m.p.h. faster than the British plane. Kniskern was posted at 280 m.p.h. for a very difficult race with two other great planes, it was evident to all that the expected speed of over 300 m.p.h. on the straight was high. After three laps, Flight Lord Kniskern dropped out being the two Supermarine 55's and one March 1935. At the end of the sixth lap, Captain Gosssett flew within the feet of the lower of the hotel apparently in difficulty and was seen to turn toward his hangar.

The winning plane was fitted with a special down pipe. The winning plane was fitted with a special down pipe. The winning plane was fitted with a special down pipe. The winning plane was fitted with a special down pipe.

Supermarine 55 was not made public. Supermarine 55 was not made public. Supermarine 55 was not made public. Supermarine 55 was not made public.



Flight Lord G. M. Webster, R.A.F., being given his plane to the winner by the race organizers and prior to the actual race.

The very only days of flying and that after the machine was produced of strength of similar type was produced by Italy for the first time.

The Italian was a machine of very great features. All the fuel was stored in the starboard tank. The effect of this is particularly to balance the engine torque and make the machine more stable in flight. The fuel is stored in the engine by means of an engine driven pump. The fuel tank is constructed in a section of the fuselage. Wing surface features are not.

The engine is constructed entirely of metal, the skin being made of the strongest. The engine mounting consists of a cast bronze extension to the fuselage, the skin of the engine being all the engine loads. The down are constructed of aluminum, being specially treated to resist water corrosion. The wing is built of wood and is covered with a special material underneath the skin.

The wing is made by joining it along both sides of the fuselage in contact with the skin through specially constructed aluminum. The propellers are of the steel type and are mounted by the Power Aviation Co., Ltd., London. The engine is mounted in a cast bronze extension to the fuselage, the skin of the engine being all the engine loads. The down are constructed of aluminum, being specially treated to resist water corrosion. The wing is built of wood and is covered with a special material underneath the skin.

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Colonel T.E.V., one of the participants in the previous Schneider Trophy race, observed the race for the first time. He was one of the participants in the previous Schneider Trophy race. He was one of the participants in the previous Schneider Trophy race. He was one of the participants in the previous Schneider Trophy race.

#### Charles Levine Arrives Unexpectingly

Extremely unexpected was the arrival of Charles Levine who came out of the northern shore from Venice where he had landed in Italy with a broken propeller. Without a passport, he landed in Italy and everywhere he went in Venice, as well as in the Lake, he was greeted with cheers and followed by crowds. The enthusiasm of the Italian was so great that it was announced that he had been appointed one of the COMMISSARI SPONTIVI, the committee who had supervision of the race. As soon as it was announced by the radio, a protest was filed with the authorities that such an appointment was not proper under the rules and the designation was withdrawn. Mr. Levine was followed by camera men and newspaper men as well as a curious crowd before and after the race. He flew to Rome the day after the race.

Before the description of the race is given the English and Italian planes may have been all previous records for the short distance. Speeds up to 320 m.p.h. are freely predicted. Despite the accident in the Glider IV before, there are many who believe that it may surprise the world by its speed. The two English designers H. J. Mitchell of the Supermarine Aviation Works, and H. P. Mitchell who is chief designer of the Glomacraft Aircraft Co. are well known in the United States both having had entries in the race in Baltimore in 1933.

Next year the race is expected to take place at Gove in England and the committee of the Aero Club of Great Britain hope that they can hold the race as early as possible in the summer, possibly in June or July.

#### Plan Mexico-U. S. Airline

A RECENT report from Mexico City, Mexico, states that the Mexican Company of Aviation has proposed an airline from that city to the American border by way of Tampoco and Matamoros, border towns. The proposal was given to the Secretary of Communications and Public Works by General Brito of Tampoco, head of the company.

The proposal calls for a guarantee of \$5,000 pesos monthly, half of which is to be paid by the Government and the other half by the larger business interests of the Republic. The company is said to be one of the largest commercial aviation companies in Mexico and has for many months operated a daily mail and passenger service between Tampoco and Mexico City.

#### Work Started on Flying Boat

THE DOUGHERTY plant, according to a recent report, has started construction on a flying boat to carry sixty passengers and a crew of eight. It is stated that it will be powered by 12 engines of 500 hp. each, weighing 23 tons empty and 25 tons loaded. It is to have a span of 180 ft. and a length of 136 ft.



(Fig. 25) Diagram of Air Corps' first wind tunnel, now in. Speed 60 m.p.h.

## The Wind Tunnel and Its Contribution to Aviation

By E. N. FALES  
Consulting Engineer, Air Corps  
Wind Tunnel, Dayton, O.

THE WIND tunnel's contribution to aviation may best be gauged by recalling that the Wright Brothers' original flight of 1903 was made possible by their wind tunnel work of 1902. They derived a tunnel consisting of a pipe 18 in. in dia. in which a smoothly-flowing stream of air was maintained by means of a fan. Into this artificial wind they introduced many shapes of small model wings, 12" x 6" in size. The air force on each were measured by a sensitive balance at known velocities and recorded as "coefficients" of lift and resistance. Obviously, the most efficient shapes were those giving the greatest lift for the smallest resistance.

It was by these tests on little metal models 1/80th full size that the Wrights solved the problem of mechanical flight. They arrived at just the proper wing shape necessary, too narrow, say—a curve having its maximum camber located about 1/3 the distance from front edge to rear edge—and having the bend of the camber about 1/20 the distance. It was only after the wind tunnel had shown the way that the first successful "power flights" were made in 1903.

With the recording of these coefficients the Wrights could make calculations as to exact wing area and in the later "monocircling flights" they fully verified the correctness of

the coefficients measured on the small models. It should be said that, before their time, no exact lift and resistance coefficients had even been made. Even the painstaking laboratory tests of Langley had been unsatisfactory, many a device proving better than the wind tunnel, viz.—a sailing ship, in which the models were whirled around in a circle under sail.

Not only did the Wrights depend on the wind tunnel, but their choice of a wing, but they also had to create a new science of propeller design, likewise based on wind tunnel coefficients. At that time only marine propeller practice

could be studied in the laboratory, and these were made as they predicted only about 50 per cent efficiency, far an airplane propeller, coefficient for lift.

The Wrights analyzed the propeller design by a new method, based on their own lift and resistance coefficients (taken from the Drenth's model). They converted each group of lift to be divided from lift to be taken on definite number of "feet" or sections. They reversed their propeller as the sails revolved, and the slowest would be the one to receive air in exactly the same as the 3 ft. model propeller. The wind tunnel had been created by the artificial air—

the lift and resistance coefficients for the models, the coefficient values were calculated for each blade lift, and the sum of all forces on all the blades. The lift and resistance was assumed to show what those that would be expected to give and what horsepower they would be expected to require.

These coefficient calculations showed differences well over 50 per cent values between the test-tube, and later the wind tunnel calculations. Reference to the press of the day shows the amazement with which lay engineers accepted the Wrights' airplane propeller efficiency. The lay press had yet acquainted with the simple logic of the "lift" and "resistance" coefficients, and as that these still remained valid for several years in the Wright's "pocket note-book," until other wind tunnels sprang up all over the world.

### Center Field Experimenting

Then, in 1910, at Dayton, a civil engineer named Gustav Lillie. He had tried to determine simple air-force coefficients by such indirect means as dropping objects from the top of a tall tower and observing the effect of air resistance on the drop. Impressed with the superiority of the wind tunnel method to these out-door methods, he built two wind tunnels much larger than the Wrights' from the teachings of his wind tunnel "recollections" and the various technical reports then on the scene of aerodynamics covered a great topic. He adapted the use of such a complete airplane for prediction of flight performance. He tested model propellers by actually rotating them in the air stream; he measured pressure distribution on model wings and found that a "pressure" above the wing contributed to the total "lift." He measured the resistance of various shapes, discs, spheres, cylinders, spheres, etc. Then, then, about 1910, wind tunnels (25 in the U. S.) have been built where, with their expanding personnel of about 30 specialists, constitute an essential factor in building up the science of aerodynamics. The character of work done usually divides itself into two classes:—

(1) Tests of complete aircraft models, to predict performance.

(2) Researches on the general principles of aerodynamics. The first group (tests of complete models for performance prediction) frequently requires previous research and enables the performer to safely submit the results of a proposed airplane project, without awaiting actual flight tests of the product.

The entire of such tests is well illustrated by the case of the Wright Brothers. Then, with its air engine was, in 1922,

the largest plane ever built, and embodied many features which, if only from their very size, were novel and unusual. However, by means of a wind tunnel test of a scale model the probable performance and stability were gauged. (Fig. 1) The great plane went into the air on its trial flight designed for its stability on the results of the miniature model test—the "stability" was set exactly to the angle re-



(Fig. 30) A group of wind tunnel test results.

lated in the wind tunnel. That the setting was correct was at once obvious to the pilot who, as he later reported, found the plane to balance perfectly, and to fly "hands off." (Fig. 2).

Had no method been available for correctly predicting the stability setting, and had a mistake resulted, the loss in money alone would have been very great. In such cases as this a wind tunnel test affords very valuable "insurance" against danger and damage. During the past five years the McCook Field wind tunnel has thus insured half a hundred experimental projects meaning into several millions of dollars value. (Fig. 3).

A typical case of performance prediction would be some such as follows:—

(1) The designer will lay out a proposed new airplane to



(Fig. 31) Actual plane taken during the wind flight of the new "stability" model. A 1/10 scale model was first tested in wind tunnel.



(Fig. 41) Air flow on a model of a Thomas-Morse airplane findings photographed in the wind tunnel.





The Windows Files listed on a local drive

## The Boeing Shipboard Fighter

Type F3B-1 is a Single Seater Plane and is Powered  
With a Pratt & Whitney "Wasp" Engine

**T**HE BOEING F2B-1 is a single-seater shipboard fighter airplane, convertible land and airplane. It was designed and built by the Boeing Airplane Co., Seattle, Wash., to meet the demand of the Navy for a high performance airplane suitable for use from aerial vessels. These requirements have been filled so well that the Navy Department has ordered from the Boeing Company seventy-four air-

It is a tractor hybrid, and its appearance is strongly marked with the characteristic features of the Dozing family of fighting planes. It is powered with the Pratt and Whitney "Wasp" engine, which is neatly cradled into a fuselage of good streamline shape. The general arrangement and type of construction is conventional in character, and the plane owes its superiority in performance to careful attention to detail rather than any radical features of structure.

## Upper Wing Built in One Piece

The upper wing of the airplane is built in one piece. A simple operating system of rods gives positive control for each aileron. Ailerons are on upper wing only. Tailage is provided in the wing for extra gasoline required for special operations, thus eliminating the very serious problem, faced in previous fighters, of refueling and carrying special tanks, which formed protuberances from the fuselage, increasing the resistance and reducing the speed of the plane.

The body of the airplane is a chromo-molybdenum tube structure, with lining of swaged tie rods and duralumin tubes. In addition to the ordinary air and landing loads, it is designed to sustain the stress of launching from a catapult and of landing in the arresting gear of an aircraft carrier. The

engine mount is of tubular steel construction and is bolted directly with the fuselage framework, reducing the amount of work required in the assembly of the airplane.

The tail surfaces and particularly the vertical surface are very sturdy and rigid in construction and are laid out to withstand loads of unknown magnitude, as the paramount importance of gusty updraughts the necessity of a steady platform.

The lead type leading gear incorporates the standard Baum also suit, but the arrangement of the members of the gear is worthy of note. Considerable difficulty has been experienced in a number of leading gears on account of excessive lubrication of the wheels as they retreat under the load of



The Bayesian Policy Agent has access to the same

Number 1, 1987

This particular design is unique in that no laces or pins are involved. The fixed landing gear is readily lowered and raised, and demands of one centre pivot hinge for lateral stability. It is designed to absorb any factors contributing to seaworthiness by allowing the water, the air resistance has been the point where no appreciable loss in high speed is incurred by the conversion from land plane to seaplane. The wing is of the cantilever type, and the construction is such that it will be of durable construction and will be easy to fabricate in manufacturing.

### Emergency Flotation System

[illegible]

The details of the primary installation and arresting gear installation have not been disclosed, but are said to represent a step in advance over previous installations.

## Standard Steel Penetration Test

The Pratt and Whitney Wasp engine is used. It is a radial, air-cooled engine of 900 hp. A metal propeller of the Standard Steel Propeller Co. type is used without a spinner. The landing is raised into a fixed nose gear behind the propeller, and is actuated in such a way that control of temperature of the engine may be observed.

The pilot's engine light is illuminated, and, despite the large number of controls and instruments which indicate from his location, due in some measure to jealousy, none of the fuel tanks in the wings. Controls have been laid out following previous practice as closely as the added number of instruments and controls permit. The pilot has the same general arrangement of instruments of similar purpose to simplify comparison. The panel is furnished with a special View to Right and View to Left indicator, and is provided with an adjustable seat to raise or lower the pilot's eye for a precise landing. The engine controls have an adjustment for the engine's power, and a fuel control valve, and a fuel control valve, and a fuel control valve.

Lincoln Aircraft Co., is Now  
Producing Two Planes a Week

**THE LINCOLN** Aircraft Co., Lincoln, Neb., is now producing two of the Lincoln Page three place biplanes and is expected that within a short time the production will be increased to one each day. The Lincoln Aircraft Co. was the first to produce the well known Lincoln Standard biplane. It later the Lincoln type light. It is now producing a conventional type light, biplane powered with an O.E.S., Hercules or Wright Whirlwind. All of the biplanes produced to date have been powered with Curtiss O.E.S. engines.

The stage is entirely of steel, well faired with the floor, yet comfortably seating two passengers. The engine is removable. It folds the engine is very well a member of the model. The fuel tank has

capacity of 42 gal. The engine mount is easily removed so that any of the aforementioned engines may be installed. The plane is designed so that it can carry any of these types without strengthening the plane in any way. The radiator is mounted below the engine, above the oil tank, and below the

There are four microbars, balanced rudder and adjustable stabilizer. The Lorenz Page is easy to control having a good climb, and a wide speed range. The wings are of constant



A few up at the Lincoln Park station

al construction with interphase strain of the N type of stream line taking. They are of the aut type of construction and no center section.

The following specifications on the GX-4 powered Lincoln Pace hoists were submitted by the manufacturer:

[illegible]

## Frederick Knack Joins Aerotech

**FREDERICK KNACK**, formerly in charge of full scale testing, a member of the staff for aerodynamic research at the Daniel Guggenheim School for Aeronautics at New York University, is now associated with Aerotech, Inc., Shrewsbury, Mass.

Aeroleak, Inc., announces that it is now ready to test and certify the performance of airplanes, including high speed cruising speed, landing speed, rate of climb, service and short field ceiling and take-off and landing run. All results will be reduced to standard atmosphere to afford direct comparison between airplanes. If desired.

# The S.A.E. Holds Annual Aeronautic Meeting

All Six Sessions Well Attended by Leading Aeronautical Engineers

THE ANNUAL aeronautic meeting was conducted by the Society of Automotive Engineers at the Hotel Waldorf-Astoria in New York City, on Oct. 10, 11, 12 and 13. The meeting, which was well attended, was featured by a well rounded out program that included papers on most of the principal phases of commercial aviation delivered by well known authorities. The theme of topics for many of the papers was made purposely controversial with a view to arousing discussion on many of the debatable points on the design of airplanes, engines, ailerons and on aircraft regulations. Among those present at the six sessions were representatives of nearly all of the manufacturers in the East and Middle West. In addition there were also airway operators and representatives of the various branches of the military and civil branches of the government, including William P. McCrath, Jr., assistant secretary of commerce for aeronautics and E. F. Warner, assistant secretary of the Navy for aeronautics.

The first session on the afternoon of Oct. 10, was opened by Secretary Warner, chairman of the Aeronautic Meeting Committee. After a tribute to the late pioneer in aviation, Charles Matthew Massey, the meeting was turned over to Prof. Alexander Klemin, chairman for the first session. The first topic was "Studies in Metal Construction" with papers by William B. Shaw, Chief Metal Airplane Co., Charles Ward Hall,

Charles Ward Hall, Inc., Jean Rucke, Wright Field, Camp B. D. Wrightman, Naval Aircraft Factory; and Lew L. Shorrock, Shorrock Manufacturing Co., Miami, Fla., and Shorrock described in some detail their individual methods of using metal for the construction of airplanes. Mr. Shaw dwelled on the use and application of aluminum sheet metal while Mr. Shorrock described his methods used in applying duralumin for wing and fuselage construction employing riveted and bolted open sections, stress a connection, stress and protective varnishes. Charles Ward Hall brought out some very interesting features in his construction. In his paper, Mr. Rucke discussed in some detail "The Selection of Materials for Aircraft Structures." He discussed the various metal used for various parts of airplanes of different type, in addition to when it was in use to obtain a reduction in possible resistance. Commander Wrightman compared wood and metal as structural materials for aircraft with special reference to the design of flying boats and flying boat hulls.

This series of papers was followed by a very lively discussion in which Mr. Shaw brought out how psychological are passengers and prospective passengers before the design of commercial airplanes. The latter was discussed in many of the pronounced designers of airplanes present, including Anthony Fokker of the Atlantic Aircraft Corp. According



Left, William P. McCrath, Jr., assistant secretary of commerce for aeronautics, who delivered a paper on "A Commercial Airport for New York." Center, H. M. Green, General Motors Corp., who acted as a session chairman and also was chairman of the Aeronautic Meeting Committee. Right, Edward E. Warner, assistant secretary of the Navy for aeronautics, who acted as a session chairman and was also chairman of the Aeronautic Meeting Committee.

to Mr. Fokker the appearance of an airplane seems more to be plain than to the layman going for his first flight. The problem of economics of duralumin was discussed by various manufacturers who all seemed to differ on what protective measures are necessary. Mr. Shaw argued that a polished surface is a detriment. This discussion was followed by a paper on "Structural Tests in the Wind Tunnel" by E. S. Fales, of Wright Field.

The second session, held that evening, included papers by General M. Young of the Department of Commerce and Gen. E. W. Steadman of the Department of National Defense, Ottawa, Ont., Mr. Young outlined some of the activities of the Department of Commerce concerned with aircraft regulations, discussing many of the questions that have arisen regarding aircraft regulations. Commander Steadman described the difficulties experienced in regard to the engineering features of the meeting of civil aviation in Canada during the past two years. This was followed by two papers, one on the "Monoplane or Biplane" by Prof. G. H. Chaffield and another on "Biplane Versus Multi-Engine Planes" by Anthony B. O. Walker. In the discussion that followed Mr. Shorrock brought out that he had constructed both monoplanes and biplanes, with the resulting deduction that there was little difference in performance though the monoplane was cheaper to produce.

## Vain Made to Hurdley Field

The sessions of the second day were on airways and navigation. Papers were presented on "Ocean Navigation" by Gen. Allen Hays-Burger and Sunday Jones of Wright Field and on "Instruments for Ocean Navigation" by Victor E. Gekker of the Pioneer Instrument Co. The problems in respect airplanes and the calculation for long flights are taken up as well as the details of the instruments themselves. At this session Secretary E. F. Warner spoke. "The Dual Application of Commercial Aircraft in the Naval Service" by Assistant Secretary Warner emphasized the lack of development in this country.

That evening the members and guests proceeded to Hurdley Field, Long Branch, N. J., to see the night air mail race and take off. At Hurdley Field papers were presented by R. E. Vaden of the General Electric Co., and by F. R. Smith of the Sperry Gyroscope Co. Mr. Vaden discussed the

lighting of airports while Mr. Russell Gault spoke on the need and equipment of airways.

The afternoon of the last day, Oct. 20, Guy Chaffard of Wright Field presented a paper entitled "Calculated and Actual Performance of Supercharged Engines." The paper outlined methods producing power output as well as discussing various type superchargers. It was followed by a very interesting discussion by E. Y. Jones, chief engineer of the Wright Aeronautical Corp. and R. A. Hearn of General Electric Co. Capt. E. H. Feltzsch of the "Maintenance of Wright Air-cooled engines in Commercial Operation" and John Stone spoke on the "Phase of an Airport in a City Plan." Captain Feltzsch presented some very interesting figures of the cost of operating the Colonial Air Transport from New York to Boston.

That evening the Metropolitan Section of the society held a meeting at airports at which papers were presented by Secretary McCrath, on "A Commercial Airport for New York City," by William E. Arthur of William E. Arthur and Co. on "Design and Construction of Airports" and by Gen. J. F. O'Brien, president of Colonial Air Transport, Inc., on "Airports and Their Relation to Civil Aviation."

## Curtiss in Commercial Field

ANNOUNCEMENT HAD been made that the Curtiss Aeroplane and Motor Co., which is now building auxiliary plants at its factory at Garden City, Long Island, N. Y., and aircraft engines at its plant at Buffalo, N. Y., will shortly enter the commercial airplane manufacturing field. It is understood that the commercial planes will be manufactured at its main factory, possibly that of the Robertson Aircraft Corp. of St. Louis, Mo. This proposition is headed by Maj. William B. Robertson, vice president of the company, and will result between St. Louis and Chicago, recently announced its intention of manufacturing commercial airplanes, powered with Curtiss engines.

The announcement by the Curtiss company came as a surprise to many who have followed its development. For nearly eight years the Curtiss organization has been one of the leaders in the manufacture of military and naval airplanes and engines. The parent company was formed in 1909 by Glenn H. Curtiss.



These were Warren Green, in the aeronautical industry who acted as session chairman during the 1927 S.A.E. Aeronautic Meeting. Left is Ed. Charles H. Quinn, Pioneer Instrument Co., Mr. Lawrence E. Page, Pioneer Airplane, Inc., and Prof. Alexander Klemin, New York University.





# AIRPORTS AND AIRWAYS

## New Orleans, La.

By Ted R. Linton

New Orleans welcomed Col. Charles A. Lindbergh with a cheering throng in spite of the General's absence.

In the evening 700 New Orleansans gathered at the largest hall of the Roosevelt to honor the first New York to Paris flier. Colonel Lindbergh delivered an impressive address for the occasion. "I appreciate this reception very much," Colonel Lindbergh declared, "but I wish in the future that you devote part of your interest to myself to aviation."

Colonel Lindbergh made an excellent visit, not in his schedule, to Pensacola in a naval airplane to call on a friend, Senator E. K. Ladd, U.S.N. The latter befriended him in 1924 when he spent a month at Ladd's home while repelling his captives.

Establishment of airplane service between Chicago, Minneapolis and New Orleans and the Mississippi Gulf Coast to be operated on later than Dec. 1, is being planned by the Mississippi Valley Air Transport Company, of Memphis.

Tenn. The company, according to Capt. J. E. Bell, is operating a fleet of six twin passenger planes with extra crewmen. The air line expects to maintain a schedule which will bring Chicago within two hours of New Orleans daily.

Work was resumed recently in the effort that the Great Airplane and Continental Airways of Denver is planning to operate New Orleans service, according to the executive committee of the New Orleans Association of Commerce and General L. A. Trombly in chairman.

The early completion of the Alvin Cullender trade field below Algiers was indicated recently when members of the commission named pledged themselves to make provision for an appropriation of \$15,000. The action of the four members of the named group at the meeting followed the presentation of appeals from several civic organizations.

The special committee in charge of planning the completion of the second half of the landing field was highly excited with the favorable action taken by the council and announced that they are endeavoring to get \$5 citizens to subscribe the amount pledged by the commission and of it.

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that may be started as soon as possible. It was stated that five of the 15 have already been covered and the commission expected to experience no trouble in getting the required money in a few days.

## Oklahoma City, Okla.

By Fred F. Fair

Phase II Chapter of the Department of Commerce and Finance, J. H. Dahl of the national weather bureau at Washington, was in town. They have been making an air survey of the Chicago-Boston air mail route upon which Oklahoma City is situated.

The headquarters of the National Air Transport line has announced that 127 passengers were carried through Oklahoma City during September.

The Oklahoma City Aero Club is being organized through the work of local air fans. G. H. Stevens is leading in the work, which is president and George Sage, vice-president. The club is hiring Berrell Tynes, local flier, to give three classes in aviation and later actual flight instruction for members. A place in it to be purchased for the club was so soon secured. The municipal flying field, southwest of the city, is to be used for the flight work.

Regulations for construction of hangars and private use of the municipal field have been formulated. H. W. Parker has been named field manager to see that these regulations are carried out. The field is to be open to all planes. Hangars for private use must be built in line with the present PAV hangar and extending southward.

The Oklahoma City University is making plans for the establishment of an aviation school. It is to be known as the Lindbergh School of Aeronautics.

An charter was created a school on the staff of General

Johnson who would have made him colonel in the National Guard if he were a member of the state. Colonel Goshall dropped a message from the air on a parachute at the Capital Shopping the General's wife in Parkville and dropped a message of condolence to the General and Mrs. W. A. Irwin, "Burr" Irwin's parents.

The new Commerce Exchange Building is to have a sign placed on the top of the structure to help pilots find direction. This building is being completed on the south of Oklahoma City. The sign will be 150 feet high with a black background and have the name of the city and an arrow pointing in the direction of the city landing field.

The success of the work of the local chamber of commerce in developing Oklahoma City's flying field has been noted elsewhere about the state. The Elverson chamber has asked for advice on the building of their airport. Clinton and Parkville have also asked advice.

## St. Louis, Mo.

By H. A. Lindbergh

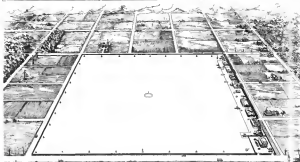
One of the pilots of the Robertson Aircraft Co., which is operating the contract air mail route between St. Louis and Chicago, made a record run between the two points when he covered the 575 mi. in 1 hr. 50 min.

Portages of the route, which crossed the Lambert road, are permanent were carried by air from St. Louis to Cleveland in five hours even.

Edwin Gerner made a trip from Pittsburgh to Chicago with pictures of the world series for Permanent, in one of the planes owned by the Robertson Aircraft Co.

The Robertson Flying School is running full force and thirty-one students are enrolled at present. School standards are held as training planes as the men in charge believe that

## According to Air Commerce Regulations



The above shows typical modern view of AAA airport, as prescribed by Air Commerce Regulations. Department of Civil Aeronautics. 1—Runway. 2—Taxiway. 3—Holding apron. 4—Radio tower. 5—Building for observation. 6—Fuel tank. 7—Fuel tank. 8—Fuel tank. 9—Fuel tank. 10—Fuel tank. 11—Fuel tank. 12—Fuel tank. 13—Fuel tank. 14—Fuel tank. 15—Fuel tank. 16—Fuel tank. 17—Fuel tank. 18—Fuel tank. 19—Fuel tank. 20—Fuel tank. 21—Fuel tank. 22—Fuel tank. 23—Fuel tank. 24—Fuel tank. 25—Fuel tank. 26—Fuel tank. 27—Fuel tank. 28—Fuel tank. 29—Fuel tank. 30—Fuel tank. 31—Fuel tank. 32—Fuel tank. 33—Fuel tank. 34—Fuel tank. 35—Fuel tank. 36—Fuel tank. 37—Fuel tank. 38—Fuel tank. 39—Fuel tank. 40—Fuel tank. 41—Fuel tank. 42—Fuel tank. 43—Fuel tank. 44—Fuel tank. 45—Fuel tank. 46—Fuel tank. 47—Fuel tank. 48—Fuel tank. 49—Fuel tank. 50—Fuel tank. 51—Fuel tank. 52—Fuel tank. 53—Fuel tank. 54—Fuel tank. 55—Fuel tank. 56—Fuel tank. 57—Fuel tank. 58—Fuel tank. 59—Fuel tank. 60—Fuel tank. 61—Fuel tank. 62—Fuel tank. 63—Fuel tank. 64—Fuel tank. 65—Fuel tank. 66—Fuel tank. 67—Fuel tank. 68—Fuel tank. 69—Fuel 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The low landing speed of this type makes it more suitable for the student as it gives him more time in which to judge his distance before landing, thus a faster plane.

A new specially built engine during experimental phase, that is powered with a 550 hp. Hino engine, was recently tried out and the performance exceeded expectations.

All types of repairing is done in the shops of the Robertson Aircraft Co. and parts are available in the large warehouse.

The Brighton Aircraft Corp., dealer for the Earlwick in eastern Missouri, Arkansas and northern Illinois, has no students receiving flying instructions at present.

The solo flight is being made in a Standard but all training will soon be done in new Earlsfield.

W. J. Ashby and Gene Reed made a trip to New York in an Earlsfield during their vacation and reported a good trip without any trouble.

The city of St. Louis is planning on the purchase of the Lambert-St. Louis Flying Field, the tract of land located about seven miles from the city limits and thirteen miles in the port office, on which the Robertson Aircraft Co. and other commercial aviation companies are carrying on their activities.

The plan that has been recommended to the Municipal Airport Plan and Board of Supervisors is to use the field as follows:

The cost of purchasing the 540 acre site is \$200,000 while desired improvements of \$144,000 will mean a necessary expenditure of \$76,000, which amount should be raised by a bond issue during the November election in 1928.

In the meantime A. B. Lambhart has offered to rent this field to the city for the nominal sum of one dollar per year until the proposed bond issue is passed and suggests that public

spatial estimate make \$25,000 to perfect an option on the remaining 278 acres.

This sum will be applied as first payment on the purchase price and will be refunded to the promoters if the bond issue is approved, otherwise the sum of \$25,000 becomes a loan to the promoters.

An estimate of \$5,000 has been made as being sufficient for maintenance, which sum would be under the supervision of the Park Department and no doubt made available by an ordinance passed by the Board of Aldermen of St. Louis.

#### Kansas City, Mo.

The progressive cities are not content with a field that is far from town, even though it is well equipped and well known, as Kansas City is now at work on a close-in field, on which two large hangars have been erected.

It is the need to well to make a field easy to reach and as the people are not always sure of the location of their own field, markers should be placed at convenient points that lead to the airport.

Kansas City has taken into consideration the two above points, as the new municipal airport is easily located and can be conveniently reached.

The old Richards Field is still being run by the Innes Earlsfield Sales Co., the dealer for the Earlsfield in western Missouri and western Kansas.

This 100 acre field is approximately eleven miles southeast from the center of town and can be conveniently reached by way of a concrete highway.

On arriving by air, there are two takes one mile east of town, one having an island, which can serve as a landing.

The Russell Earlsfield Sales Co. is conducting a flying school that covers the operation and maintenance of a plane, including a thorough ground course that prepares the stu-

dent for the requirements of the Department of Commerce officials. Only Earlsfield is sold and the cost of the aircraft is paid down on some country flying, with the student still on his own landing field.

There are about 20 men in training and this number would be large but those who do not present the necessary qualifications at study to become pilots are washed out.

The 1 or 2 stall hangar will accommodate about 20 small planes. If as there are more of the field both day and night, planes can be serviced whenever desired. There are no lights at night flying, but there will be lights when some pilot desires to act down his plane after dark.

A specially built Earlsfield House is now in use for some country work and has been in service as an ambulance.

The American Eagle, which is manufactured on loan is brought out to the field to be assembled and flight tested. About 10 or 15 planes are usually completed each week.

Edward F. Schuber and William H. Dierck, pilots of the Earlsfield Earlsfield "Trade of Detroit," who covered most of their trip around the world by air, stopped at the field on their way out from the Pacific Coast.

The National Air Transport, Inc., occupies part of the big steel hangar, which is heated during cold weather and is a comfort and efficiency of the mechanics working on the plane.

Planes and pilots are generally changed at Kansas City, whether these going north to Chicago and the others going south to the southern terminus of the constant air mail route to Dallas.

The movements of all planes are directed as well as reported from the operations office located in Kansas City.

The National Air Transport, Inc., will occupy one of the largest of the new municipal airport, where the field and maintenance work is sufficiently progressed to allow operation without interference or considerable delay, due to the absence of the field or inefficient equipment on hand to use in the emergency.

#### Pearis, Ill.

This city is on the southeast air mail route operated by the Robertson Aircraft Co. between St. Louis and Chicago. A regular passenger service is being planned between the two end points on the route, with stops at Pearis and Springfield.

There are about five planes regularly at the municipal field, which covers forty-one acres. These planes are used for passenger carrying, aerial taxi and student instruction.

The Union Aviation Co. has the agency for the Air-King, while the Earlsfield is sold by Howard Cole.

The United States Army Corps of Engineers and the Royal Air Force have visited this field, as they have done in a number of other throughout the country.

The field, which has been in use about a year, is located about 10 miles from Pearis on a concrete pavement and is capable of night flying. A hangar with about a four-plane capacity has been erected at this airport.

#### Rafale, N. Y.

Edwin K. Brown

airport, called by Colonel Lindbergh one of the best in all over now, has been the scene of several accidents. For the first time in its history it has been the scene of a crash landing and military aviation, during the first of the war training school. More than 40 recruits of the former Army officers took part in the training school. It is expected to be the forerunner of a regular flying school opened with a lecture on parachute training delivered by Harold G. Rogers, governor, attended in his demonstration by Ben Goddard.

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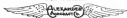
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of the Army Air Corps. Lessons on Army flying rules and regulations were given by Lieutenant Biggs.

F. Thomas Dawson, assistant secretary of war aviation, arrived here in a three-engine Peking, a make of the plane used in the Army's flight to Hawaii. It was piloted by Louis Leake, J. McCallister, one of the two pilots in the flight. Harry Johnson, Secretary Dawson's assistant, was also a passenger.

During the day Secretary Dawson visited the plant of the Irving Aircraft Company, the Consolidated Aircraft Company and the Coddier Aeroplane and Motor Company. He spoke to the officers in training at the airport in afternoon and in the evening was the guest of honor at a banquet extended by the city. He said that Buffalo was now an important part in the Army's scheme for air defense and that the Buffalo airport was one of the best he had ever seen. The city had offered to buy additional land and present it to the government for an Army training field. The following afternoon lectures were given by Louis Fred Nelson, instructor for the Alaska and Russia-the-World flights, on new types of airplanes and by Milton J. Washburn on aerial photography.

Capt. Thomas Murphy lectured on observation plane and Captain Fawcett of the regular Army led the instruction on auxiliary fire adjustment. Auxiliary control methods were also discussed by regular Army officers.

Government men were well pleased with the attention and the establishment of a permanent base for Army flight at Buffalo means success.

The school closed with a sham battle fought with planes carrying smoke screens and the regular industry from Fort Niagara.

Buffalo real estate men, anxious to promote the city as the site for a flying center, introduced air time methods and went to the annual convention of the New York State Association of Real Estate Boards by plane.

James E. Jones, developer of Buffalo airport, took his big Ford plane to New York for the event and accompanied President Leonard G. Robinson, J. Joseph O'Leary and Gus Conway. William D. Woodhead made the trip in his single passenger plane.

The Buffalo real estate men enjoyed all of the comforts of modern travel on their quick flight to New York. But before taking off from Buffalo a six-course dinner from the kitchen of the Hotel Statler was taken aboard and the pilots enjoyed the comforts of a speedily served Star's dinner in the clouds.

## Los Angeles, Cal.

By Charles F. McKeon.

Although flying has been growing in popularity by leaps and bounds recently in Los Angeles, the past few days have brought two developments of such widespread interest as to give an entirely new tone to local aviation.

Throughout the summer the flying fields have been used by thousands of eager operators and dozens of airplanes have stood in line at every local airport on Saturday and Sunday, waiting their turn for a bird's eye view of the city. During these rush periods there has usually been a slight hour when cars could not come so easily as a dozen planes in the air at once.

All of this flying has been carried on, however, mostly in the support of headlong crowds and persons who come to see just happened by and were drawn to the field by the sight of so much activity.

The new order of things had its inception a few weeks ago when Jack Madden, local Glendale dealer, brought in a Ford plane to Rogers Airport and started sight seeing

and a large scale. Then a couple of weeks later Theodore Hall

dropped in with one of the new Ford-built planes, completely new, once around a city.

By means got under way recently when both the Madison and the American Aircraft Corporation appeared in all of the Los Angeles newspapers with heavy advertising of their new plane service.

But Madden is operating the Ford plane on a daily schedule between Los Angeles and San Diego, and has not only been flying a round trip daily with capacity load but has his plane constantly booked for sight seeing trips and various other kinds of aerial transportation so that the huge Ford plane has become an everyday sight as it goes back and forth across the Los Angeles straits.

The American Aircraft Corporation is advertising a scale of prices on various sight seeing excursions that includes excursions from the Santa Monica Palms for five dollars to the new reppel summit ascent of Mount Wilson for twenty dollars and so on a month's series of most interesting flights for less money.

The advertised and organized air tours have brought a rush response. Two examples are of interest. A group of twelve men were invited to a breakfast before the clouds in the clouds of the Ford plane, by Max Miller Dorn, and the results were an immediate response. Theodore Hall took a group of men to go on a flight with him and before a group of men along in the clouds of his Ford-built airplane he flew about in the utmost comfort while his guests looked on the report of the third game of the world series from a different angle.

Activities such as these are making great interest in Hollywood and Pasadena and it is to be expected that in the near future wealthy persons will not only patronize these scheduled services but will themselves get up airplanes and have their own private scale planes in readiness for frequent private parties.

The American Aircraft Corporation, operated by J. B. Atkinson, Theodore Hall and "Doc" Wilsey, has opened the new field on the west side of Main Street in grand style. The location is about three miles southwest of Los Angeles, on one of the busiest highways as Southern California, and the field, which lies just north of Rogers Airport and was previously under the control of "Black" Wilsey, is the third private field yet to be established in Los Angeles. The entire acreage was first graded and then heavily sowed with a special mixture of grass seed which is growing rapidly under the constant ministrations of automatic water sprinklers. Six hangars have been completed along the south border of the field, which means seed and wood, and a seventh dealer hangar is located facing Main Drive. This display hangar houses the office and service department and the Ford-built plane is kept there in full view of the passing public at all times.

Perry Adams, president of the N.A.A., stopped in Los Angeles recently on his way from the National Air Show in Spokane. While at the Automobile hotel a hangar was set up in his honor by Capt. Charles H. Bell, governor of the Southern California branch of the N.A.A. Mr. Adams has done everything in his power to encourage local aviation and a wing plan for a winged airplane in order that the first plane for 1938 may be properly handled by the city. This is the first hangar in his honor since Lindbergh's life. Max Ross Russell, Lincoln, Byron Correll and Rex H. Smith, "Clay" Jones, Eddie Benson, Donald Douglas, J. C. Cooper and many other nationally known figures in aviation.

The Rogers Airport was recently transformed into a huge new one for the benefit of an aviation production starring Jack. A complete new scene was constructed and a

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